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ABSTRACT

Eight mainstreamed students with specific learning disabilities (LD) and five with general LD (8-14 years old) were trained through films, role playing techniques and token reinforcement to apply learning principles to improve the quality of their social interactions with their nonhandicapped peers. Results of observations of Ss' interactions before and after training indicated statistically significant improvements in the quality of Ss' social interactions, specifically, changes in negative nonverbal and positive verbal peer initiatives, Ss' response of reinforcing positive contacts, and peers' positive verbal and nonverbal responses. (CL)

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HANDLING SOCIAL INTERACTIONS:  
TEACHING LEARNING PRINCIPLES TO SPECIAL EDUCATION CHILDREN

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### Abstract

Mainstreamed special education students often experience inadequate social interactions with their peers. An attempt was made in this study to improve the quality of their social interactions by teaching them general principles of learning, and training them how to apply these principles in modifying both their own and their peers' behavior. Eight elementary SLD students (ages 8 to 13 years) and five seventh grade GLD students (ages 13 to 14 years) were trained for five weeks by their homeroom teachers who used (a) a film that modeled the basic learning principles (e.g., positive reinforcement, extinction, and punishment), (b) role-playing techniques incorporating realistic social situations typically experienced by the trainees, and (c) a token system that not only encouraged them to participate in the training and role-playing, but also rewarded them for appropriate applications of the principles to their social interactions in the classroom, hallways, playground, etc. The program was evaluated by observing their interactions both before and after the training. The results, as reported individually for each trainee, showed important individual differences and were discussed in terms of their usefulness to the teachers. The results, when analyzed as group data, indicated statistically significant improvements in the quality of certain aspects of the trainees' social interactions. These generally positive results were interpreted cautiously because of the simplicity of the experimental design and because of the exploratory nature of the training and of the observation methods.

### Acknowledgements

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We would like to express our appreciation to Randall Docauer, Implementer, and to Diane Anderson and Jeri Harrison, teachers of the special education students, for their many hours of discussions with us and for the quality of their information and suggestions. Their aid was indispensable to the design and execution of the project. Special thanks are due Dr. Robert Hoffman for the work he performed in the initial stages of the project.

Without the hours of observations conducted by our students, there would be little to report. Thanks to Barb German, Meg Gorzycki, Debbie Grandstrand, Susan Gross, Lorrie Ketcham, Susan Lawrow, Susan St. Marie, Suzanne Roles, and Ann Ross for their patience and care.

A project such as this intrudes upon the normal routine of school operations and we appreciate the cooperation of Mr. Marinac, principal of Washburn Elementary School and Mr. Good, principal of Woodland Junior High School.

Finally, our thanks to Rebecca Hammer who compiled the mass of data into comprehensible tables and to Jean Sackette and Terri Ford, our typists.

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## INTRODUCTION

Both Federal and State regulations require local education agencies to mainstream handicapped children with normal children in the public schools. During the last three years Title VI-B has provided funds to the Duluth Public Schools to develop a demonstration project to achieve least restrictive placement of handicapped students. In implementing this project the teachers noticed the problem of harrassment of special education children by the "normal" children and approached the Project Implementer, Mr. Randall Docauer, for assistance in this matter. We were then asked by Mr. Docauer to design a training program for special education students who were being mainstreamed at Washburn and Woodland schools. We were told that the program was needed for the mainstreamed children because they were having social adjustment problems in their day-to-day interactions with the "normal" children in the hallways, classrooms, playground, etc. After several meetings with Mr. Randall Docauer and the teachers we decided to develop a program to teach the mainstreamed children the basic principles of learning which would be helpful to them in handling everyday life problems. The focus of the training was on behavior rather than on attitudes or other abstract psychological constructs such as thoughts, feelings and emotions. It was reasoned that if these children learned and used the basic learning principles it would lead to changes in both their own and their peers' behavior which would subsequently produce changes in their own thoughts and feelings and those of their peers. Thus the main purpose of the training was to enable the trainees to handle interactions with their peers more successfully.

### Specific objectives of the program:

- (1) To develop a training program which would enable the mainstreamed children (hereafter referred to as trainees) to handle peer interactions more effectively.
- (2) To familiarize the special education teachers with the contents and techniques of our training program so that they could provide this training to their students.
- (3) To monitor the implementation of the training so that, if necessary, the procedures and/or approach could be modified in the light of feedback given by teachers or students.
- (4) To conduct an evaluation study to assess the effectiveness of the training program.

In order to achieve the above objectives in a four month period (February through May 1978) we decided to work on the training package and the evaluation design simultaneously. The details of the training package are described in the Method section of this report. This package was comprised of selected sections from the book Reaching Out (Johnson, 1972), a film entitled Who Did What To Whom? (Mager and Bandura, 1976), research by Graubard and Rosenberg (1974), and a handout on learning principles that we wrote for the teachers in this project. The evaluation design was the one-group, pretest-posttest design. The pretest and posttest were the observations of the interactions of the trainees with their peers in the playground, hallways, and classrooms. We designed an observation sheet which was used by the trained observers for recording their observations both at the time of pretest and posttest. The procedures used for collecting data are described in detail in the Method section.

Since both teachers had good knowledge of learning theory and its applications, our task of familiarizing them with the training package became very easy and enjoyable. Instead of having training sessions for them we organized a series of discussion sessions with them. These sessions were devoted to discussing both the content and the technique of the training program. These discussions and collection of pretest data occurred simultaneously so that immediately after the pretest observations teachers could start the training. The training program continued for about five weeks followed by collection of posttest data.

The remainder of this report consists of: (1) a Method section, detailing the training program and the pre-post collection of data, (2) a Results section, describing the pre-post differences in behavior, and (3) a Discussion section, evaluating the meaning of the results and the project as a whole.

### METHOD

In this section are described the methods used in training the special education students ("trainees") how to use behavior modification techniques, and the methods used in collecting the pre- and post-training data used to assess the effectiveness of the training.

#### SUBJECTS

Ms. Diane Anderson's Washburn Elementary student/trainees were eight males in grades 3-6, ages 8 to 13, with special learning disabilities (SLD) and reading levels of 1st grade to 3rd grade. They were in Ms. Anderson's self-contained class for language arts and math. The boys were mainstreamed for gym, music, art, social studies, science, and field studies; two boys were mainstreamed for math. The boys were bussed to Washburn from all over the city.

Ms. Jeri Harrison's Woodland Junior High student/trainees were three females and two males in grade 7, ages 13-14 years, with general learning disabilities (GLD). They were in a resource program and mainstreamed in everything except English, geography, math, and study hall.

#### IDENTIFICATION OF TARGET BEHAVIORS

Our initial task was to identify the trainees' and their peers' behaviors that were to be changed. This was accomplished in a series of discussions with the two teachers.\* Based on the information they provided about the type of social interactions they wished to increase or decrease, we compiled a summary list of such behaviors (Table 1) that served both as a basis for the observation data sheet and as a reference sheet for the observers. These behaviors were then used to generate categories for the observation sheets which are described in the following section.

#### PRE-TRAINING OBSERVATION PROCEDURES

In order to determine the effectiveness of the training procedures, data were collected both before and after the training. The pre-training data thus provided us with a baseline against which post-training observations could be compared.

\*We thank Dr. Robert Hoffman who did the initial work on this task.

Table 1. BEHAVIOR EXAMPLES

For Peer Initiates, Trainee Initiates, and Peer Responds Blocks:

<u>Negative verbal</u> <ul style="list-style-type: none"> <li>--swearing/obscenities</li> <li>--name calling (characterizations)</li> <li>--giving putdowns (laughing at mistakes, criticism, etc.)</li> <li>--blaming</li> <li>--interrupting, shouting, making noises</li> <li>--threats</li> <li>--other teasing/bugging</li> </ul>	<u>Positive verbal</u> <ul style="list-style-type: none"> <li>--talks friendly to</li> <li>--greets</li> <li>--compliments</li> <li>--invites</li> <li>--asks a question</li> <li>--phones</li> <li>--tells how feels</li> </ul>
<u>Negative nonverbal</u> <ul style="list-style-type: none"> <li>--hitting/pushing (kicking, tripping, tackling, Kung Fu, throwing, poking; ramming with something, splashing, spitting)</li> <li>--slam doors</li> <li>--pushing chairs/desks</li> <li>--whistling</li> <li>--faces made/tongue out/other gestures</li> <li>--damage other's property</li> <li>--holding door closed</li> <li>--pushing books down</li> <li>--drawing terrible pictures</li> <li>--writing swear/obscene words</li> </ul>	<u>Positive nonverbal</u> <ul style="list-style-type: none"> <li>--plays with</li> <li>--smiles</li> <li>--positive eye contact</li> <li>--shares</li> <li>--takes turns</li> <li>--pat on back/arm around</li> <li>--helps (with homework, other task)</li> <li>--studies together</li> </ul>

For Trainee Responds Block:

(Few examples here; please refer to your definitions of these terms.)

<u>Reinforces positive contacts/incompatible responses</u> <ul style="list-style-type: none"> <li>--compliments for some positive contact (shaping)</li> <li>--responds with any of above positive examples</li> </ul>
<u>Reinforces negative contacts</u> <ul style="list-style-type: none"> <li>--acts out called names</li> <li>--tells authority/teacher</li> <li>--attention</li> </ul>
<u>Extinction</u> <ul style="list-style-type: none"> <li>--ignores negative or positive behavior completely</li> <li>--withdraws (includes retreat)</li> </ul>
<u>Punishes negative contacts</u> <ul style="list-style-type: none"> <li>--verbal assertion (cut it out, please stop, I want to be your friend, negatives above)</li> <li>--nonverbal assertion (eye contact, head held up, negatives above)</li> </ul>
<u>Punishes positive contacts</u> <ul style="list-style-type: none"> <li>--negative examples above</li> </ul>

Data Sheet: The data collection sheet (Table 2) was designed to provide information on (a) social interactions initiated either by the trainees or by their peers and (b) on the trainees' and peers' responses to these social interaction initiatives. (The term "peers" on the data sheet refers both to "normal" students and to other trainees with whom the trainee under observation is interacting.) Rather than list all the important target behaviors identified by the teachers (Table 1) we listed general categories of social interaction initiatives by peers or trainees: i.e., positive or negative, and verbal or nonverbal. These same categories were used for peer responses; however, for trainee responses we listed the behavior modification techniques that were to be the focus of training: i.e., reinforce positive or negative contact, extinction, and punish positive or negative contact.

Note that the data sheet can be read like an abstract sentence in order to recreate the sequence of events: for example, in Table 2 the sample data indicate that a peer made a negative nonverbal social contact (e.g., perhaps sticking out his tongue); the trainee under observation at that time responded by reinforcing the negative contact (e.g., got upset and cried); the same peer in turn provided negative verbal contact (e.g., called the trainee a retarded coward); this particular episode continues into column 2, as indicated by the arrow under column 1, in which our trainee decides to try punishing the negative verbal contact (e.g., slaps the peer); the peer's final response is negative nonverbal (e.g., again sticks out his tongue).

Each data sheet represents one four- or six-minute unit of observation of a trainee. "Episodes" refer to discrete (i.e., separated in time and space) social interactions during the four- or six-minute time. We arbitrarily decided to continue a given episode for only two columns (thus, the arrow mentioned in the example above).

The data sheet thus provides information on the nature of social interactions between trainees and peers that will be used to determine if these interactions have become more positive after training.

Observers: The observers who collected the data were solicited from an introductory level course in Developmental Psychology at the College of St. Scholastica. They were given credit for completing the "project" requirements of the course in both the winter and spring quarters (except for one student who participated only in posttest and another student who was not in this course but instead received Independent Project credit). These nine female observers were not told the purpose of their observations; we explained

Table 2. THE DATA SHEET

Student/Trainee \_\_\_\_\_ Observer \_\_\_\_\_ School \_\_\_\_\_

Time \_\_\_\_\_ Date \_\_\_\_\_ / 1978 Location \_\_\_\_\_

		EPISODES									
BEHAVIORS		1	2	3	4	5	6	7	8	9	10
Peer Initiates	Negative verbal										
	Negative nonverbal	xx									
	Positive verbal										
	Positive nonverbal										
Trainee Initiates	Negative verbal										
	Negative nonverbal										
	Positive verbal										
	Positive nonverbal										
Trainee Responds	Reinforce pos. contact										
	Reinforce neg. contact	xx									
	Extinction										
	Punish pos. contact										
	Punish neg. contact		xx								
Peer Responds	Negative verbal	xx									
	Negative nonverbal		xx								
	Positive verbal										
	Positive nonverbal										
	Nothing										
	COMMENTS										

that they had to be naive about the project until its completion in order to avoid unintentional biasing of their observations. We emphasized that although it was hard to completely avoid formulating their own hypotheses, they should try not to let this influence their observations. The observers were instructed not to interact with the trainees--to use "extinction" if the trainees attempted interacting with them.

Observer Training: Observer training consisted of four components: (1) general discussion of the need for accuracy and unbiased observation in research, (2) teaching of the basic principles of learning theory so that they understood the Trainee Responds section of the data sheet, (3) practice trials in using the data sheet with hypothetical examples provided by us, and (4) practice observations and data sheet use at the schools; this practice consisted of one visit to the schools to meet the trainees and learn their names, one visit for practice, and the first day of regular observations which the observers thought were real but which we treated as final practice by not using the data collected. Refer to Appendix A for a full description of written instructions given to the observers. These Observer Instructions also provide more detail on how the data sheet was utilized.

No inter-observer reliability checks were scheduled, due to logistical problems. Instead, observers reported back daily with any ambiguities or questions. We checked their data sheet records to determine if we would have made the same recordings given the situation as they described it to us. Observers made apposite notes and comments on the data sheets to help us interpret the situations recorded.

Locations and Times: The eight Washburn Elementary School trainees (students of Diane Anderson) were observed outside on the playground from 8:00-8:20 a.m. and from 11:30 a.m.-12:10 p.m. (after their lunch) from March 6 through March 14 (seven school days). The weather was generally cold, sunshine with snow-covered ground. An average of two observers were present during these times. Each observer chose a target trainee according to a pre-determined sequence in order to assure approximately the same number of observations per trainee over the seven day pre-test period. Each target trainee was observed for a six-minute unit, after which the observer moved on to the next trainee.

The five Woodland Junior High trainees (students of Jeri Harrison) were observed in two classroom situations (9:48-10:38 a.m. and 10:42-11:38 a.m.) and in the hallways between classes and lunch (9:44-9:48 a.m., 10:38-10:42

a.m., 11:38 a.m.-12:42 p.m., and 1:08-1:12 p.m.) from March 6 through March 14 (seven school days). One observer at a time was present in the classrooms and from one to three observers worked the hallways. Trainees were observed according to a pre-determined sequence as explained above; however, the unit of time observed was only four minutes (as determined by the maximum length of time for hallway movements).

Teacher's Observations: As an informal correlate to the observer's data, Diane Anderson also collected information on significant social interactions reported to her or to her aide. This will be compared to her post-training information.

#### POST-TRAINING OBSERVATION PROCEDURES

Post-training observations were conducted essentially the same way as described above for pre-training. Differences are noted below. Post-training data were collected to determine if training had any effect on the base-line levels of behavior observed during pre-training. (It should be noted that this simple pre-post design with no control group will make interpretations of the data tenuous, but it was decided in advance that in order to accomplish any goals of this pilot project with the time and resources available, we would have to compromise on the research design.)

All observers used for pre-training observations participated in post-training observations in the same schools, locations, and times they had observed during pre-training. Because of reduced observer time available, one new observer was trained and added to the Washburn observations.

Also due to schedule problems and other unforeseen difficulties, the length of observation was ten, rather than seven, school days (from May 1 through May 12) in order to get approximately as many observations in post-training as in pre-training.

The playground environment at Washburn was changed in that it was much warmer, without snow-cover, and with somewhat less sunshine.

Since the observers were participating in this project for academic credit, we presented the details of the whole study to them following the completion of data collection. In addition, they were debriefed in order to supply us with information on how to better train observers and conduct observations of this type in the future.

#### TRAINING PROCEDURES

The training procedures used in this project represent the application of the principles of learning theory to actual everyday social problems of

the trainees. The basic assumption of learning theory is that most human behavior is learned behavior. With a knowledge of the basic principles of learning, behavior can be understood and changed. The aim of the training program was to teach these principles to the mainstreamed children (trainees). Appendix B describes the points covered in training. We reasoned that by knowing these principles these children would gain confidence in their ability to effect positive and constructive changes both in their own behavior and that of their peers. Thus the three main objectives of the training were to enable the mainstreamed children to: (a) strengthen and maintain appropriate behaviors of their own and of their peers, (b) weaken and eliminate peer behaviors which are inappropriate, and (c) learn new behaviors which previously did not exist in the trainees' repertoire.

The program was characterized by these four distinct features: (a) Modeling, (b) Behavior Rehearsal (Role Playing), (c) Feedback, and (d) Transfer of Training. Each of these features is briefly described below.

Modeling: This was the foundation of the program. The film Who Did What To Whom? (Mager and Bandura, 1976) was used with trainees at both Woodland and Washburn schools for nine days. The film shows how we teach one another, punish one another, and learn from one another. It consists of forty short scenes--typical events which occur every day at home, in school and around the office. After each scene, discussion time was provided to help viewers fully understand what occurred, the probability of its happening again, how an event could be changed to achieve a more positive result, and how the scenes applied to the viewer's own experience.

The film is accompanied by a leader's guide which contains useful information to successfully lead a training session. The guide contains the entire film script, introductory comments, discussion questions, typical responses for each scene, and theoretical interpretations.

Thus the film has been designed to help the viewer recognize actual situations in which four of the learning principles (positive reinforcement, negative reinforcement, punishment, and extinction) are operating appropriately or inappropriately. It shows them in a very simple and straightforward manner that behavior is strongly influenced by its consequences, by the result it provides--what a person does tomorrow is strongly influenced by the consequences of what he does today.

Behavior Rehearsal (Role Playing): The film was not shown in its entirety in one sitting. Instead it was divided into four logical sections with each part illustrating the use of one learning principle. The students not only discussed but also rehearsed and practiced the use of each learning principle in situations typical of the classroom and playground, etc. This role-playing of social interactions continued during the three weeks of training following the two-week use of the film.

Feedback: The teachers also designed a token system and a record keeping system which provided immediate feedback to the participating students. These tokens, they were told, could be exchanged by the students for a "bigger" reward at the end of the school year. We were very impressed by the creativity of the teachers in developing and implementing this system for providing immediate reinforcement to the children for practicing the use of learning principles.

Transfer of Training: Since training was spaced over four to five weeks, this enabled the participants to apply the principles, receive feedback, and incorporate the learning into real life situations. They applied these principles in their interactions with school staff, their parents and their peers. Encouragement was provided by teachers to test the usefulness of what they had learned in their day-to-day interactions with their peers and others. It is this transfer of training (within school settings) that was looked for in the pre- and post-training data comparisons.

In brief, the training program was designed (a) to teach the mainstreamed children the basic principles of learning theory, (b) to show how the use of learning principles can increase the quality of their relationships and the level of their interpersonal skills, and (c) to provide practice in utilizing the learning principles. We worked directly with the two teachers who translated our approach into actual practice. They designed their own system of providing reinforcement and record keeping. In Appendix C are detailed descriptions, provided by the teachers, of the actual training procedures based on the training outline described above.

## RESULTS

The major objective of the project was to improve the quality of the trainees' social interactions with their peers. The pre- and post-training observations of these interactions provided the main objective data for evaluating the effectiveness of the training in behavior modification techniques.

### ORGANIZATION OF THE DATA

The data were summarized in two ways, as described below. The tables in Appendix E present the data individually for each trainee. Table 3 is a copy of one of the Appendix E tables and is presented here as an example for easy reference. The trainees are identified by codes to protect their privacy. Trainees E1 through E8 are Washburn Elementary, and trainees J9 through J13 are Woodland Junior High. Tables 4 and 5 present the data in the form of group means (averages):

The types of social interaction are listed on the left side of each table exactly as they appeared on the data collection sheets (Table 2). Both pre- and post-training Average Frequency (left-hand set of data) and Percent (right-hand set of data) scores are listed in the individual tables (see Table 3). The differences between pre- and post-training scores were calculated by subtracting pre- data from post- data. Thus, the sign in front of the difference scores indicates the direction of change in behavior from pre- to post-training, e.g., a positive sign indicates an increase of the particular behavior in post-training, and a negative sign indicates a decrease of the behavior in post-training.

The data analyzed for Washburn Elementary trainees is a combination of the morning and lunchtime playground observations. The data analyzed for the Woodland Junior High trainees is of two separate types: one is a combination of the room 109 and hut 6 classrooms observations; the other is of all between-classes hallway observations. These locations are noted on each data table.

We will describe next how the Average Frequency scores and Percent scores were obtained from the observation sheets raw data.

Average Frequency per Unit of Observation: These scores were obtained by (1) adding up the total number of times each behavior occurred for each subject, (2) dividing this total frequency by the number of six-minute (at Washburn)

or four-minute (at Woodland) units that the trainee was observed during the pre- or post-training periods. Thus, these scores are a good indication of the average level of activity of the particular behaviors listed.

Each data table contains the number of times, or units, that the trainee was observed during pre- and post-training. This information might be helpful in getting a feel for what amount of the trainee's time he/she was observed. Although it may appear that each individual was observed for only a small percentage of time, we emphasize that the Average Frequency data is based on a representative, random sampling of observations during the pre- and post-training periods. Therefore, this average provides a good approximation of their day-to-day behavior.

The reader will have to make decisions regarding the practical significance of the difference scores. For example, is a +0.67 change more meaningful than a -0.35 change, or than a +.05 change? Our recommendation is that the reader get a feel for the general average activity levels in the pre- and post-columns and use that as a basis for evaluating the difference scores. Thus, each individual difference score should be evaluated in terms of the specific pre- and post-scores that were used to obtain the difference. After describing the other procedure used for summarizing the data, we will provide a detailed example of how to utilize the individual data tables.

Percent of Behavior Within Block: These scores were obtained by: (1) adding up the total number of times all behaviors within a block (e.g., Peer Initiates block has four types of behavior) occurred for each subject, (2) dividing this total into the frequency for each of the specific block behaviors, and (3) multiplying by 100 to get a percent score. This type of data is different from the Average Frequency data in that it does not give an indication of general levels of activity for the specific block but it does provide a comparison of how a specific behavior ranks in relative frequency with the other types in the same block. For example, out of all Peer Initiates behaviors, these data answer the question: did negative verbal predominate, or did negative nonverbal, or did positive verbal, or did positive nonverbal?

#### PRESENTATION OF THE DATA

The two types of scores described above will now be used to present data first for individual trainees (Table 3 and Appendix E) and then in group form (Tables 4 and 5) for the two schools. The data for individual trainees will be useful for the teachers who are interested in interpreting the progress of individual students. The group data is provided for the benefit of principals,

Table 3. DATA SUMMARY FOR WASHBURN TRAINEE E-5 (Playground)

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Peer Initiates	Average Frequencies per Six-Minute Unit of Observation			Percent of Behavior within Block*		
	Behaviors Observed		Post- minus Pre-Difference	Pre-	Post-	Post- minus Pre-Difference
	10 Units	20 Units				
Negative verbal	.20	.25	.05	14	15	1
Negative nonverbal	.60	.20	-.40	43	12	-31
Positive verbal	.50	.85	.35	36	50	14
Positive nonverbal	.10	.40	.30	7	24	17
Trainee Initiates						
Negative Verbal	0	.05	.05	0	3	3
Negative Nonverbal	0	.20	.20	0	12	12
Positive verbal	1.20	.90	-.30	80	53	-27
Positive nonverbal	.30	.55	.25	20	32	12
Trainee Responds						
Reinforce pos. contact	1.00	1.90	.90	59	75	16
Reinforce neg. contact	.10	.10	0	6	4	-2
Extinction	.60	.30	-.30	35	12	-23
Punish pos. contact	0	0	0	0	0	0
Punish neg. contact	0	.25	.25	0	10	10
Peer Responds						
Negative verbal	.10	.20	.10	4	5	1
Negative nonverbal	0	.25	.25	0	6	6
Positive verbal	1.40	1.85	.45	50	44	-6
Positive nonverbal	.30	1.35	1.05	11	32	21
Nothing	1.00	.55	-.45	36	13	-23

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

administrators and others who want to look at general trends in the data and evaluate the overall effectiveness of training so that they can make decisions regarding the future use of this training program. It should be pointed out that in view of large individual differences, these group data are not as meaningful as the individual trainee data.

Individual Trainee's Data: As can be seen, the Average Frequency data and Percent data are just different ways of looking at the same basic frequency of behaviors data recorded by the observers. Both taken together provide a more complete picture of behavior changes from the pre- to post-training periods. In order to describe how to read and utilize these data, we will go through an example using trainee E5 (Table 3):

It appears that the social interactions initiated by E5's peers generally improved (see Peer Initiates block) after training because there was decrease (-0.40) in negative nonverbal and increase in both positive verbal (+0.35) and positive nonverbal (+0.30) peer initiatives; however, there was little change (+0.05) in the frequency of negative verbal initiatives. These Frequency data interpretations are supported by the Percent data which indicate a heavy proportion (43%) of negative nonverbal initiatives during pre-training that shifts to an even heavier (50%) proportion of positive verbal initiatives in post-training. Notice, however, that the change is much greater in the decrease of negative nonverbal (-31 difference) than the increase of positive verbal (+14 difference).

Trainee E5's responses (see Trainee Responds block) to these social initiatives also generally improved because he almost doubled the frequency of reinforcing positive contact (notice here we are implying that we are looking at the pre- and post-scores in order to interpret the strength of the +0.90 difference scores). In looking at the Percent scores, however, we see that the proportions of reinforcing positive contact compared to the other possible trainee responses did not increase as dramatically (+16), although by post-training, reinforcing positive contact is 75% of the trainee's total responses! Extinction responses decreased both in frequency (-0.30) and percent (-23) which at first view is not good news because this was an important skill being trained. However, this is another example of how each score must be viewed in light of others--E5 apparently transformed many of his extinction responses into reinforcing positive contact responses, a more affirmative approach, and we must remember that there were fewer negative initiatives to respond to with extinction (see paragraph above).

The preceding analysis of E5 could be completed by looking at the Trainee Initiates and Peer Responds blocks, too. Such an analysis would add further information to the interpretations just made of the Peer Initiates and Trainee Responds blocks.

We feel that the data in this project are most useful for the teacher when looked at separately for each individual trainee, as was done above in the example of trainee E5. Our emphasis up to now has been on explaining how

to use the data so that the teachers can make detailed interpretations of their students' progress in light of their specific knowledge of each student and his or her reactions to the training program. Nevertheless, group data can provide useful information about general trends in the data; therefore, we next present the data in the form of group averages.

Group Data: In Tables 4 and 5 are the average or mean difference scores for each behavior for both schools. There are statistical tests available that are useful in determining whether such mean differences are significant in light of individual variations in both the direction and magnitude of behavior change. The t-test, an obvious first choice, was not utilized because certain assumptions underlying this statistic could not be met by the data. Instead, the Wilcoxon test (Siegel, 1956) was applied to the data. The Wilcoxon procedure could be applied only to the Washburn data because there were too few Woodland trainees (five) to legitimately use this test. Table 4 contains the Washburn group mean differences between pre- and post-training; those that were statistically significant according to the Wilcoxon test are so labeled. Table 5 contains the Woodland group mean differences between pre- and post-training; since the Wilcoxon test was not applied to these data, we noted in the table those mean difference scores that appeared meaningful on the basis of the size and direction of the individual scores.

#### MISCELLANEOUS DATA

Teacher-Collected Data: Ms. Diane Anderson and her aide Mrs. Swor kept a written record of critical incidents reported to them during the pre- and post-training periods. The rationale for this procedure was that they usually heard from their students about the most serious of the negative social interactions among the trainees and their peers. We thought it would be interesting to see if there would be any changes in the nature of these reports after training.

The post-training reports contained numerous references to positive interactions related to the specific skills taught in training; however, since no such positive incidents were described in the pre-training reports, no comparisons could be made.

Only negative interactions by the trainee toward his peers were counted --that is, no count was made of negative interactions by peers toward the trainee, and no differentiation of who initiated the interaction was made-- the records contained insufficient information for these two types of data.

The total number of negative critical incidents by the eight trainees decreased from 51 in the pre-training period to 34 during post-training (see Table 6).

Obviously these data are more subject to bias than the naive observers' data reported earlier, since the teacher and aide were very aware of the purposes and expectations of the project. Another problem with these data is that two of the boys increased slightly in number of negative incidents from pre- to post-training, and one boy alone accounted for 13 of the 17 decreased number of incidents.

Teachers' Evaluations of Training Effectiveness: The pre- and post-training observations obviously do not provide a complete picture of how effective training may have been. For this reason, Ms. Diane Anderson (Washburn) and Ms. Jeri Harrison (Woodland) provided subjective evaluations of their interpretations of the training program's effectiveness (see Appendix D). These reports will be referred to in the Discussion section.

Table 4. WASHBURN--Mean Difference Scores of Eight Trainees

Peer Initiates

Trainee Initiates

Trainee Responds

Peer Responds

Mean Difference between Pre- and Post-Training Scores for:		
	Average Frequency per Six-Minute Unit	Percent of Behavior within Block
Peer Initiates	Negative verbal	.03
	Negative nonverbal	-.38 sig. decrease *
	Positive verbal	.38 sig. increase
	Positive nonverbal	.02
Trainee Initiates	Negative verbal	.10
	Negative nonverbal	-.22
	Positive verbal	.34
	Positive nonverbal	.24
Trainee Responds	Reinforce pos. contact	.46 sig. increase
	Reinforce neg. contact	.09
	Extinction	-.01
	Punish pos. contact	.08
	Punish neg. contact	-.35
	Nothing	
Peer Responds	Negative verbal	.10
	Negative nonverbal	0
	Positive verbal	.57 sig. increase
	Positive nonverbal	.42 sig. increase
	Nothing	-.43

\*The "significant decrease" or "significant increase" printed after certain scores refers to the results of the Wilcoxon test for statistical significance.

Table 5. WOODLAND--Mean Difference Scores of Five Trainees

		Mean Difference between Pre- and Post-Training Scores for:			
		Classrooms		Hallways	
		Average Frequency per Four-Minute Unit	Percent of Behavior within Block	Average Frequency per Four-Minute Unit	Percent of Behavior within Block
Peer Initiates	Negative verbal	-.08	-6	-.03	0
	Negative nonverbal	-.04	0	-.01	-3
	Positive verbal	-.14 decrease*	3	-.25 decrease	-15 decrease
	Positive nonverbal	0	3	.03	18 increase
Trainee Initiates	Negative verbal*	-.11 decrease	-2	-.20 decrease	-17 decrease
	Negative nonverbal	-.07	-7	-.08	-7
	Positive verbal	-.07	10	.20 increase	35 increase
	Positive nonverbal	-.03	-1	-.08 decrease	-12 decrease
Trainee Responds	Reinforce pos. contact	.04	19 increase	-.31 decrease	-12 decrease
	Reinforce neg. contact	-.14 decrease	-8	-.05	-6
	Extinction	-.08	-6	.22 increase	11 increase
	Punish pos. contact	-.05	-3	.08	3
	Punish neg. contact	-.09	-2	.09	4
Peer Responds	Negative verbal	-.11 decrease	-4	-.05	-3
	Negative nonverbal	-.15 decrease	-6	-.05	-4
	Positive verbal	.09 increase	12 increase	.19 increase	9
	Positive nonverbal	-.05	-3	-.03	-1
	Nothing	-.12	0	.06	0

\*Since the Wilcoxon test could not be applied to the Woodland data, the "decrease" or "increase" printed after certain scores does not indicate statistical significance; rather, these are changes that appeared meaningful.

Table 6. Negative Incidents Reported at Washburn School

Trainees	Pre-Training			Post-Training			Difference	
	Number of Reports to:			Number of Reports to:				
	Teacher	Aide	Total	Teacher	Aide	Total		
E1	9	3	12	7	1	8	-4	
E2	4	5	9	3	1	4	-5	
E3	2	1	3	3	0	3	0	
E4	0	1	1	3	1	4	3	
E5	0	1	1	0	0	0	-1	
E6	14	6	20	5	2	7	-13	
E7	1	2	3	1	0	1	-2	
E8	2	0	2	7	0	7	5	
Sum	32	19	51	29	5	34	-17	

### DISCUSSION

This section will provide the reader with (a) interpretation of the results presented in the preceding section, and (b) suggestions for modifying the training program in light of the findings of the present study.

#### INTERPRETATION OF RESULTS

As we have said several times in this report, the observation data revealed large individual differences in the social interactions of these children. This means that even though the students are uniformly labelled as GLD's and SLD's, the within-group differences are of such a magnitude that the teachers will have to do a lot of work on an individual basis. It was in view of this fact that we made a separate table for each child. We recommend that these tables be used by the teachers, as explained earlier, to study the progress made by each trainee. The difference score and the post test data can then be used in developing an individualized program for next year.

The group data for Washburn School show that there were significant changes in the expected direction for (a) negative nonverbal and positive verbal peer initiatives, (b) trainee's response of reinforcing positive contacts, and (c) peers positive verbal and nonverbal responses. The reader might have also noted that there was considerable (though not statistically significant) increase in both positive verbal and nonverbal initiatives of the trainees. These results may be interpreted as indicating that as a result of training, the special education students have increased the frequency of positive contacts and have therefore elicited more positive behavior from their peers.

In view of the small number of trainees at Woodland School, the group data could not be tested for statistical significance. However, we did notice a number of meaningful changes in this data as well. For example, there was a decrease in the trainees' behavior of (a) reinforcing negative contact of their peers in the classroom and (b) initiatives of negative verbal behavior both in the hallways and in the classrooms. It was also noticed that there was considerable increase in the positive verbal initiatives of the trainees in the hallways. As a result of these changes in the trainees' behavior there was some increase in the positive verbal responses of their peers. Even though the main differences for Woodland trainees are not very large, a

number of them are in the expected direction.

In interpreting the results it is important to remember that the evaluation design used in the present study is a one group pretest/posttest design which does not have a control group to provide data for comparison. One should, therefore, infer with caution the cause and effect relationship between the training and the difference scores. Without using a control group it is difficult to rule out the effect of maturation, the differences in the standards used by the observers, the effect of the nice spring weather and factors other than training operating in the lives of the trainees. As pointed out earlier in our observation system, the peers include both other trainees and the normal children. The changes in the "Peer Initiates" and "Peer Responds" categories may therefore be a direct result of the training rather than the effect of the trainee's behavior on the peer's response. We therefore recommend that in replicating the study the evaluation design should be such that (a) the effects of extraneous influences (e.g., maturation, and observer bias) be minimal and (b) the observation system should separate the peers' data from the data of other trainees.

#### SUGGESTIONS FOR MODIFYING THE TRAINING

From the data we have presented in the preceding pages it is obvious that the training program has produced some positive effects on the trainees' behavior. However, we have also noted that all of these differences between pre- and post-training observations are not statistically significant. We feel (and the teachers feel the same way) that perhaps the results would have been much more substantial if the training would have continued for four to five months instead of four to five weeks as was the case in the present study.

How will the extended training differ from the short term training we used this year?

(1) It would give the children more opportunity to master the basic principles of learning theory. Teachers have indicated that there were large variations among the children in the degree of mastery they could achieve in this area. Perhaps the children differ in the rate with which they learn this material. Individual attention should, therefore, be given to insure that a certain level of mastery is achieved by each child. One cannot expect the application of these principles from the students unless they have a good grasp of the material.

(2) We recommend that test items be constructed to provide the teachers

with some objective evidence of the trainees' understanding of the learning principles. These items can be attempted by the students on an individual basis whenever they are ready.

(3) The film Who Did What To Whom? should be used several times during the year to illustrate the main principles. As the teachers did this year, they can divide the film into four or five logical units and follow each unit by discussions and rehearsal of the behaviors shown in the film. More opportunity for role playing will improve the trainees' understanding which in turn would enable them to utilize this training in their social interactions.

(4) The token system developed by the teachers this year will be modified in the light of this year's experience and be used throughout the year. This provides quick feedback to the trainees and enables them to see the principles in action. Perhaps their mainstream teachers can also be involved in providing reinforcement to the trainees.

(5) Since observation by external observers may not always be possible, we suggest that systematic records of reported incidents be kept by the teachers to monitor the changes in childrens' behavior.

Thus the main difference in the training suggested for next year is in terms of intensity and duration of training.

In summary, we recommend that (a) the training program should operate throughout the school year, (b) more opportunity be available for children to rehearse the appropriate behaviors so that they are better prepared to utilize them in their interactions with their peers, (c) teachers keep systematic records of the incidents reported by the trainees and (d) pre- and post-training observations be continued for at least one more year. Implementing these recommendations would be an extension of the present study and would provide better indication of the effectiveness of the program we developed this year.

The approach taken in this study is somewhat unique in the sense that it attempts to teach the special education students some general principles which will enable them to modify their social interactions with others. Instead of teaching "normal" children how to behave with "disabled," the training program works directly with the special education students and teaches them behavioral skills which they can use not only while they are in school but also in the community. Thus the main thrust of this approach is to make the trainees more independent so that they feel more confident in interacting with others.

## References

Graubard, P., & Rosenberg, H. Classrooms That Work. New York: E.P. Dutton, 1974.

Harrison, J. Student Interaction--Affective Domain: Least Restrictive Placement of Handicapped Students. Unpublished report submitted to Special Education Department, Duluth Public Schools, Duluth, Minnesota, 1977.

Johnson, D.W. Reaching Out: Interpersonal Effectiveness and Self-Actualization. Englewood Cliffs, New Jersey: Prentice-Hall, 1972.

Mager, R.F., & Bandura, A. Who Did What To Whom? Champagne, Illinois: Research Press, 1976..

Siegel, S. Nonparametric Statistics For the Behavioral Sciences. New York: McGraw-Hill, 1956.

## Appendix A

OBSERVER INSTRUCTIONS

## I. General

1. Remember the need for accuracy and unbiased observation.
2. Use your best judgement in recording new or unusual situations; always make notes if you are unsure of your decision so that we can discuss it.
3. Report daily to Mehrotra/Dietrich with your data sheets and with any questions or problems.
4. Names/telephones:
 

Washburn Elementary:	Ms. Diane Anderson, teacher;
728-4251/4252	Ms. Swor, aide.
	Mr. Marinac, principal.

  

Woodland Jr. High:	Ms. Jeri Harrison, teacher.
724-8868	Mr. Good, principal.

  

Scholastica:	Dr. Mehrotra, ext. 489/549.
728-3631	Dr. Dietrich, ext. 486/549.
5. Refer to the Pretest Schedule for the days and times and locations of your observations. Be sure you've arranged meeting time/place with your driver or rider.

## II. Observation Sequence

1. Locate your targeted trainee (see list of names below). If you can't find him, locate the next trainee on the list. Note the time on your data sheet and begin observing. (Prepare your data sheets in advance of going to the school, i.e., name of trainee, your name, school. Since you can't be sure of how many trainees you'll observe in a given day, fill the date and location in at the school.)
2. Use a data sheet only for one 4-minute observation period, even if it is not filled up. You may use more than one sheet during a 4-minute period if there are more than 10 episodes; re-number the second sheet episodes as 11, 12, etc.
3. Complete one "episodes" column for each social interaction between the targeted trainee and his peers.
4. At the end of the 4-minute observation period, check to be sure all appropriate information is on the data sheet, and then locate the next trainee on your list.
5. When observing, try to be discreet. Don't make it too obvious whom you are observing. Do not intervene in the children's behavior (except to save life, limb, or property). Give brief answers to their approaches to you; ignore if possible. You are a wallflower.

## III. Using the Data Sheet

1. Decide who initiated the interaction--peer or trainee.

2. Place a check (or code letters if required) in the box that best describes the nature of this initiation of social contact; see your yellow sheet lists of behavior examples.
3. Place a check (or code) in the box that best describes the response to this initiated contact:
4. Depending on who initiated the social contact, your sequence of checks will be as follows:
 

Peer initiates----Trainee responds----Peer responds in turn---  
(next column) Trainee responds again---Peer responds again.

Trainee initiates---Peer responds----(next column) Trainee responds in turn----Peer responds again.
5. Notice in 4. above that I continued the episode into a second column. Most social contacts will continue like this and even go on longer; however, we have decided to stop after two columns. You must make a decision as to when a new one-or-two-column episode begins as opposed to mere continuation of the same episode. Our suggestion is that if there is a definite time or space break between the two children, you consider it to be a new episode (even if from the children's point of view it is a continuation of a fight begun only a short while ago). When the episode continues into a second column, be sure to place an upward-pointing arrow at the bottom of the first column in order to make this continuation clear.
6. If it is not clear whether a social contact is negative or positive, make your judgement based on what you think the other child's interpretation of the contact is.
7. You can record more than one type of initiates/responds contact if necessary, i.e., if the contact is both a name-calling (negative verbal) and a kick (negative nonverbal), check both in the appropriate section.
8. Using the comments section: make use of the spaces provided under each column and in the lower left corner to write in comments that might help us to interpret your data. For example,
  - if, as in 6. above, you are unsure of the positive or negative nature, write this down.
  - record any unusual or extraordinary situations that are not apparent in looking at only your check marks.
  - if you are unsure about who initiated, about what was done or said, about whether it is playing or fighting, etc, write this down.
  - if the "peer" in an episode is another trainee who you are not presently observing, write down his name.
  - if a situation is very complex or confusing, i.e., more than one peer is involved in the episode, write this down.
  - make a general notation (in the lower left) about the physical and psychological "climate" during the period you were at the school that day; this can be done late when you are finished with everyone.
  - if for some reason you can't complete the 4-minute observation, i.e., trainee disappears, goes to bathroom, etc., write this down.

## IV. Miscellaneous

1. Begin with the first child next to your name on the list of children. Continue in the list, repeating as often as necessary, following the same order. Because of absences, reliability checks, difficulties in finding trainees, etc., you might have to skip a trainee now and then. This is okay, just remember to give a priority for observation when he re-appears. After the first few days, we will count up the number of observations on each child and if some trainee has too few observations we'll tell you to observe him a few extra times.
2. Refer to your lists of physical descriptions of the children if you do not yet know them well. Also, for outdoors at Washburn, use the list of coat/hats/etc. to help you find them.
3. Special notes on the trainee's schedules:
  - At Washburn, E7/E5/E6 begin eating at 11:20 and stay on the playground until 11:50. E2/E1/E3/E8 begin eating at 11:40 and stay on the playground until 12:10.
  - At Woodland, do not follow the same child both before and after lunch.
  - At Woodland, four of the trainees go to lunch from room 211; the fifth, J12, goes to lunch from room 222.
  - At Woodland, after lunch, the boys go to room 119 (shop), the girls to room 223(home ec.).
4. Occasionally we will schedule reliability checks in which another observer will simultaneously observe the same trainee; do not change your methods of observation/recording during these checks; they are not to evaluate your competence, rather they are intended to check the reliability of our procedures and data sheets.
5. Definitions:
  - Reinforcement increases the probability of a behavior occurring again = reward.
  - Punishment decreases the probability of a behavior occurring again = reward.
  - Extinction is complete ignoring (or retreat) of negative or positive behaviors.

## Appendix B

POINTS TO BE COVERED IN TRAINING

1. Most human behavior is learned behavior. With a knowledge of the basic principles of learning, behavior can be understood and changed.
2. This unit on learning will enable you to:
  - a. Strengthen and maintain behaviors which are appropriate.
  - b. Weaken and eliminate behaviors which are inappropriate.
  - c. Shape new behaviors which previously did not exist in your peer's/your repertoire.
3. Thus the use of learning principles can increase the quality of your relationships and the level of interpersonal skills of other individuals and yourself.
4. Behavior is strengthened, maintained, or weakened by the consequences which follow the behavior. The consequences may either:
  - a. Reinforce the behavior causing it to be strengthened or maintained.
  - b. Punish the behavior causing it to be weakened or eliminated.

When we speak of the relationship between consequences and behavior we mean that a particular consequence will not happen unless a particular behavior occurs.

5. The procedure for the use of reinforcement theory in affecting the behavior of other individuals is:
  - (i) Specify an objective (pinpoint a behavior)
  - (ii) Arrange a consequence, and
  - (iii) Observe for a change in the frequency of the response.
6. An objective is a result you want to achieve with your behavior.
  - (a) Make the objective describe behavior that is observable and countable.
  - (b) Specify the desired direction of change in behavior.
  - (c) If a dead man can do it, it is not behavior.

7. Positive Reinforcement Principle

Positive reinforcement describes the process whereby the chances of a behavior occurring more often in the future are increased when that behavior is followed by a positive consequence.

Example: If every time Johnny gives an appropriate answer he is reinforced by a positive consequence such as praise or a star.

You are in this way increasing the chances that he will engage in that behavior in the future.

Positive reinforcement increases the likelihood of a performance.  
The presentation of positive reinforcers as a consequence for particular behavior usually generates good feeling on the part of both the giver and the receiver as an important by-product.

8. Punishment Principle

Punishment describes the process whereby behavior is weakened when that behavior produces (a) negative consequence or (b) results in the removal of a positive reinforcer.

The performance is followed by an aversive event. One way to

## Appendix B

reduce the likelihood of a performance is to follow it with an event that the person considers undesirable.

Examples: Spanking

- : Time out (contingent withdrawal of reinforcement for a specified period of time)
- : Response cost (contingent withdrawal of a specified amount of reinforcers)

9. Negative reinforcement principle

Negative reinforcement describes the process whereby behavior is strengthened when the occurrence of that behavior results in the removal of a negative transfer.

10. Negative and positive reinforcement are:

- (a) Similar in that they often have the effect of strengthening behavior.
- (b) Different in the way they do it
  - (i) With positive reinforcement behavior is strengthened as it results in the presentation of a favorable event.
  - (ii) With negative reinforcement behavior is strengthened as it results in the termination of a negative reinforcer.

11. Extinction Principle

Extinction describes a process whereby a behavior is weakened and eliminated when its occurrence is followed by no reinforcement.

12. The Reinforcement of Incompatible Behavior Principle

This principle describes the process in which you can weaken an initial behavior by identifying the reinforcing a behavior which is incompatible with it.

Example:

- 1. Approaching and interacting with other children is incompatible with shyness and withdrawn behavior. If you reinforce the approach behavior you will weaken the shy, withdrawn behavior.
- 2. If a child is across the room bothering one of his peers at the science center, you can eliminate the disruption by doing something that will make him stay in his seat. He cannot be in his seat and disrupt the science center at the same time. The two behaviors are mutually exclusive.

The most important point to remember in utilizing this technique is to be sure that the two behaviors are indeed incompatible.

13. Shaping describes a process in which new behavior is taught by reinforcing successive approximations of a goal behavior.

Example Developing Social Skills: A teacher starts by giving token to a child for just standing near his peers; later he is reinforced only when he is engaged in physical play with his peers. Finally, verbal interaction with peers is reinforced. The tokens are used to obtain M & M's.

The main idea behind shaping is to reinforce behavior in small steps.

14. Use a combination of principles

- Stress the positive!
- Be consistent.
- Reinforce immediately.
- Ask for small increments of change in order to guarantee change.

## 15. Summary

- (a) In order to strengthen and maintain behavior, use:
  - The positive reinforcement principle.
  - The negative reinforcement principle.
- (b) In order to weaken and eliminate behavior, use:
  - The punishment principle: (i) behavior followed by a negative consequence.
  - (ii) behavior followed by removal of a positive consequence.

The extinction principle.

The reinforcement of incompatible behavior principle.
- (c) In order to teach and shape new behavior, use:
  - The modeling principle.
  - The shaping principle.

## Appendix C

TEACHERS' DESCRIPTIONS OF THE TRAINING PROGRAMDiane Anderson--Washburn Elementary School

## DAY 1

Show the film, Who Did What To Whom?, by Mager. We showed scenes 1, 2, and 3.

I handed out the 3" x 5" punch cards and began punching for positive reinforcement, with no introduction. The children had had punch cards before, and the punches were given for positive behavior, so they already had an idea of the principle.

We then went through the narrative in the manual which accompanies the movie. We enlarged on the idea of reinforcement (steel rods in concrete strengthens the concrete. Behavior followed by reward strengthens behavior.)

We generated ideas on what they wanted their punches to buy. They came up with a list of edibles and small cars. We also talked about a final reinforcement (trip) for which the punches would be redeemable.

We illustrated the meaning of reinforcement--what kind of behaviors (verbal and nonverbal) will be rewarded by punches. In the group we role played non-verbal reinforcement (attending, physical, touching). We asked each child to give an illustration of positive reinforcement.

We then had the children verbalize the day's concepts by asking him to state (a) what behavior was the reward and (b) what behavior will be more likely to happen again in the future. If child is unable to provide his own examples, provide him with one and ask him to tell answers to (a) and (b).

We used the punch cards throughout the day.

## DAY 2

The evening of Day 1, I purchased the items the children thought would be reinforcing.

One hour of the next morning was spent in computing the price of each individual item and affixing a worth to the punches. (5 punches equals 1 cent)

We showed scenes 1-7 of the Mager movie after reviewing positive reinforcement and rewards. We role played an alternative to the scene where the boss gave a raise and she punished him. In our version she gave him a reinforcement and he gave her a bigger raise.

We also role played a scene where a boy shovels snow for one hour and the mother punishes him, "You did a crummy job. Look at all the snow you missed." Then we role played the same situation with a reward, "You're working hard." We discussed implications of each response.

## DAY 3

We reviewed scenes 11, 12 and 38 on Negative Reinforcement.

We put on the board principles of positive and negative reinforcement.

We role played a scene of teacher and pupil: (a) Teacher rewarding roaming around room through her attention, (b) Teacher rewarding sitting down.

We reviewed what was reinforced and which actions would be more likely to occur in the future.

On day one, we had generated lists of trips the boys would like to take.

Today we went through the list and crossed out those listed as "too much hassle." Each boy then voted on his favorite. The winning trip was going to Mrs. Swor's cabin.

After school I made charts for each boy, on which to record the number of his daily punches. There are also columns for Daily Total, Total Saved and Total Punches.

#### DAY 4

Saw entire movie. Reviewed all four behavior principles (positive reinforcement, negative reinforcement, punishment, extinction.).

I asked questions about the extinction scenes (19, 20, 21, 27) following the outline in the film manual. We defined extinction--children knew that when animals become extinct they aren't alive anymore.

We role played scene 27 four times (each child drew role of teacher or principal). Children had choice of responding positively or using extinction. (3 used positive, and one used changing subject) In their pairings they had to decide what they were going to do.

I introduced the charts to the children and they colored in their bar graphs.

#### DAY 5

Reshowed the movie.

We reviewed scenes 3--negative reinforcement--mink

37--extinction--reading newspaper

40--punishment--belting her

We made up scenes where positive reinforcement could be used (if she talked positively to him, made a suggestion he liked). Children gave various kinds of positive reinforcement--verbal and non-verbal.

Most of the rest of the training programs were spent in role playing situations which occur within the classroom and on the playground. The children were given the situation, and in pairs were asked to act out one of the four alternatives to each situation. Each time one alternative was used, it was discussed, and we tried to ascertain whether the behavior would be more or less likely to occur in the future. This was all done in the format of the boys' sitting in a semi-circle, with the actors in front of them. Punches were given for appropriate acting and for being "good audience."

#### DAY 6

Situation: Child entering room each day, panting noisily, as if exhausted.

Reward--paying attention

Extinction--ignoring, going on with work

Punishment--making him stay in room at noon

Positive Reinforcement--say "Good morning" when he walks in quietly.

Negative Reinforcement--giving him something to stop the panting.

#### DAY 7

Situation: Name-calling.

Positive--catch boy being good and say, "Nice smiling."

Negative--"I'll play with you if you don't ever call me that name."

Punishment--beat him up for name calling.

Extinction--While he's calling a name, walk up to him and say, "What did you do this weekend?"

## DAY 8

Situation: Chasing on playground when you don't want to be chased.  
Positive--when he isn't chasing, say, "I surely like it when you aren't chasing me."

Negative--"If you'll stop chasing me, I'll give you some candy."

Punishment--Trip him when he's chasing.

Extinction--When he approaches to start the chase, turn your back.

Situation: Back is turned, chaser starts to push the chase.

Positive--Running.

Negative--"I'll give you a piece of candy if you don't chase me."

Punishment--Turn around and slug him.

Extinction--Walk over next to Mr. Marinac (principal).

## DAY 9

Subject is shaping, which has not been discussed before. We recalled one of the first scenes of the movie, wherein a boy's juggling behavior is being shaped.

We all sat in a semi-circle. I held one boy's punch card. That boy was on stage. I thought of a behavior and the boy had to begin making some motion. When he came near the motion I had in mind I would punch his card, which was audible to him. The closer he got to my action, the more I would punch his card. Then each boy took a turn holding someone's card and shaping that boy's behavior.

We then discussed the relevance of shaping in their lives. I gave the example of wanting to make friends with the principal and how I would go about trying to accomplish that (eye contact, smiling, saying good morning, beginning conversations, etc.).

## DAY 10

Situation: A child is approaching you, with whom you want to make friends.

Positive--Look at him; say "hi."

Extinction--Look away.

Punishment--Unfriendly look to face.

Assignment for one week: Each child chooses a mainstream child, and reports this child's name to me. During noon he is to give this child some sort of positive reinforcement. We then went through the list of all the things which were reinforcing, verbal and non-verbal.

When the child comes in from the playground, he reports to me what kind of positive reinforcement he gave the mainstream child and receives punches for what he reports.

## DAY 11

Situation: A boy cheating at a game.

Positive--Smile at him when you catch him playing according to the rules.

Negative--Give him something to make him stop cheating.

Punishment--Make him write "I will play fair" ten times.

Extinction--All participants quit when he cheats, with no verbal comments.

## INCIDENTAL SITUATION

After much complaints about a boy's name calling, when he left the room we talked about the effect of their responding to the name calling and how this child is asking for reinforcement. Children generated the ideas of what he wants.

We decided on a plan:

- (a) ignore the name calling.
- (b) reinforce whenever you catch him being good.
- (c) ask Mrs. Anderson or Mrs. Swor for a private conference, if you feel yourself getting angry and wanting to explode. If able to carry this out in a "cool" manner, punches will be given.
- (d) children who ride on this child's bus will ask for a private conference with the bus driver.

Jeri Harrison--Woodland Junior High School

Objectives -Student will be able to:

- (1) pinpoint a behavior, state a possible consequence and predict the response.
- (2) verbally explain at least one way to make it more likely that a behavior will continue.
- (3) verbally explain at least one way to make it less likely that a behavior will continue.
- (4) state the most appropriate time to give positive and negative reinforcement.
- (5) demonstrate through role playing their ability to get a peer to initiate, continue, or stop a behavior.
- (6) state examples of positive reinforcement being used by themselves and others.
- (7) state the non-verbal meaning of the following behaviors:
  - (a) a smile
  - (b) giving eye contact
  - (c) ignoring someone
  - (d) breaking eye contact
  - (e) walking away
  - (f) changing the subject

I began the unit by explaining to the class what was going to take place in the next couple of weeks. During the discussion, the class came up with three questions that we were going to try to answer.

- (1) Why do things always happen to me?
- (2) I tried everything--what can I do now?
- (3) How can I get this person to do what I want them to do?

Next, without explanation, (this was done much later, however, the kids had it figured out by the end of the first day) I put into effect a contingency system using punch cards. Punches were given at first for any appropriate classroom behavior, later for participation in role playing and eventually only for good performances. Punches were also given for actual use of desired principle and eventually for only good use of the principle. At first jelly beans were used as immediate rewards: one punch--one jelly bean, three punches for two jelly beans, and two punches for one jelly bean. Later the class decided to apply their punches to going bowling one day. Ninety punches were required to go with a free game to the person with the most punches. Punches were recorded daily.

Only two of the terms were introduced, positive reinforcement and negative reinforcement, which included extinction and punishment.

To illustrate positive reinforcement I used scenes 1, 2, 3, 6, 7, and 8 of the film Who Did What To Whom?. After each scene, the class would answer the discussion questions, tell what actually took place and role play a similiar scene.

These six scenes were shown over again for a total of four days. Each day the class was given a different task such as: (1) explain: What a person does tomorrow depends a whole lot on what happened when he did it today. (2) look for: Different people giving something that someone else likes, or something someone feels is good. (3) What are some ways to increase the likelihood that someone will do something you want them to.

To illustrate negative reinforcement, I used scenes 15, 19, 20, 21 and 22. The procedure was the same as that stated above with much more role playing being used.

Without the film the lessons now consisted of discussion of the social interactions between the class members and their peers. This included role playing the situation and finding a better way of handling it. Toward the end of the unit shaping was introduced and two students attempted a project. Only one saw it through to completion.

#### Role Playing Examples:

Only the two involved know what is going on. The others must isolate the behavior, the consequence and the response.

- (1) You wish to receive a compliment.
- (2) Your friend is leaving your house and you want to make sure he will want to return.
- (3) You want someone to be your friend.
- (4) You want her to sit beside you.
- (5) You want to make her act out, yell or make a scene.
- (6) Offer to help with a math problem (two ways--scene 6).
- (7) Two in the corner talking about the third (two ways to handle it)--which is better.
- (8) Someone says something nasty to you.
- (9) You are arguing and want to stop it, but the other person doesn't.
- (10) You want your friend to come out and play, but he doesn't want to.
- (11) Your friend is pouting.
- (12) Your friend always says huh, to everything you say.
- (13) It's your turn to wear the down vest but your older brother wants it.
- (14) Your friend hangs up on you.
- (15) You need a ride to the movies, but your mother says no.
- (16) Someone dumps pencil shavings on your head.

## Appendix D

TEACHERS' SUBJECTIVE EVALUATION OF TRAINING EFFECTIVENESSDiane Anderson--Washburn Elementary School

This was a fascinating area in which to attempt to teach. Other than the outline which the film provided, I was free to create the training program myself.

As would be anticipated, some children caught on to the concepts better than some others. Some were able to verbalize the principles better than others; some were better able than others to internalize the concepts and to use what had been learned spontaneously when interacting with peers. Some generalized the knowledge into situations involving home, family and with teachers.

It is difficult to determine a clear cause-effect relationship between the training program and changes in behavior, either negative or positive. In one case (E1), during this time a boy's home life included such factors as his mother's remarriage and a brother's imprisonment. In another case, a boy (E6) who had had inappropriate behavior with primary placement in the SLBP classroom during pre-test and training portions of the study, was mainstreamed nearly full-time during post-test, to capitalize on acceptable behavior while in the mainstream classroom. Also, one boy (E7) was on a trip to California the entire training period (April 4-28).

I would like to use this training program again, perhaps even when working with the same children. I would like to begin at the start of the school year to establish the principles and set classroom ground rules based on these concepts.

Overall, it seems sufficiently evident to me that the children's response reinforced my opinion that these children can learn and use rather abstract behavior principles and that their implementation can assist them to more successfully interact with each other and their mainstream peers.

Jeri Harrison--Woodland Junior High School

When I look at the class as a whole and compare their behavior before and after the unit I don't see a lot of change. About the only thing I can say is that the negative interplay between them in the classroom has decreased, but I know it still goes on in the hallway.

When I look at each student as an individual the change is unbelievable. Those who used to come to me for every little thing are now taking charge of themselves and come only to tell me how they handled the problem. Those who because of low self-concepts could not say anything positive about themselves now give each other smiles, nods of approval and pats on the back (nonverbal positive reinforcement).

I intend to continue with this unit in the fall. With more time I am sure one will be able to see a greater change among the students.

## Appendix E

## DATA TABLES FOR INDIVIDUAL TRAINEES

**DATA SUMMARY FOR WASHBURN TRAINEE E-1 (Playground)**

**Average Frequencies per  
Six-Minute Unit of Observation**

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	.08	.29	.21
Negative nonverbal	.69	.76	.07
Positive verbal	.62	1.12	.50
Positive nonverbal	.46	.24	-.22

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	.69	.70	.01
Negative nonverbal	1.08	1.59	.51
Positive verbal	.38	.76	.38
Positive nonverbal	.77	.59	-.18

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Reinforce pos. contact	1.46	1.53	.07
Reinforce neg. contact	.15	.70	.55
Extinction	.62	.41	-.21
Punish pos. contact	.15	.18	.03
Punish neg. contact	.92	.76	-.16

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	.46	.76	.30
Negative nonverbal	1.00	1.47	.47
Positive verbal	.92	1.82	.90
Positive nonverbal	1.15	1.06	-.09
Nothing	2.23	2.06	-.17

**Percent of Behavior within Block\***

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	4	12	8
Negative nonverbal	38	32	-6
Positive verbal	33	46	13
Positive nonverbal	25	10	-15

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	24	19	-5
Negative nonverbal	37	44	7
Positive verbal	13	21	8
Positive nonverbal	26	16	-10

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Reinforce pos. contact	44	43	-1
Reinforce neg. contact	5	20	15
Extinction	19	11	-8
Punish pos. contact	5	5	0
Punish neg. contact	28	21	-7

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	13 Units	17 Units	
Negative verbal	8	11	3
Negative nonverbal	17	20	3
Positive verbal	16	25	9
Positive nonverbal	20	15	-5
Nothing	39	29	-10

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

**DATA SUMMARY FOR WASHBURN TRAINEE E-2 (Playground)**

**Average Frequencies per  
Six-Minute Unit of Observation**

**Percent of Behavior within Block\***

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	Pre-	Post-	Post- minus Pre-Difference	
	6 Units	10 Units					
Peer Initiates	Negative verbal	.50	0	-.50	14	0	-14
	Negative nonverbal	2.67	1.60	-1.07	73	53	-20
	Positive verbal	.17	.90	.73	5	30	25
	Positive nonverbal	.33	.50	.17	9	17	8
Trainee Initiates	Negative verbal	.83	1.20	.37	38	35	-3
	Negative nonverbal	.50	.50	0	23	15	-8
	Positive verbal	.50	1.10	.60	23	32	9
	Positive nonverbal	.33	.60	.27	15	17	2
Trainee Responds	Reinforce pos. contact	.83	1.30	.47	16	35	19
	Reinforce neg. contact	.33	.80	.47	6	22	16
	Extinction	1.33	.50	-.83	25	14	-11
	Punish pos. contact	0	.20	.20	0	5	5
	Punish neg. contact	2.83	.90	-1.93	53	24	-29
Peer Responds	Negative verbal	1.00	.60	-.40	14	9	-5
	Negative nonverbal	2.50	2.20	-.30	36	33	-3
	Positive verbal	1.17	1.10	-.07	17	16	-1
	Positive nonverbal	.67	.90	.23	10	13	3
	Nothing	1.67	1.90	.23	24	28	4

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

DATA SUMMARY FOR WASHBURN TRAINEE E-3 (Playground)

Average Frequencies per  
Six-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	7 Units	18 Units		
Peer Initiates	Negative verbal	.14	.06	-.08
	Negative nonverbal	.43	.17	-.26
	Positive verbal	.43	.67	.24
	Positive nonverbal	.71	.50	-.21
Trainee Initiates	Negative verbal	.43	.28	-.15
	Negative nonverbal	1.14	.33	-.81
	Positive verbal	.29	1.17	.88
	Positive nonverbal	.71	1.28	.57
Trainee Responds	Reinforce pos. contact	1.14	1.11	-.03
	Reinforce neg. contact	0	.17	.17
	Extinction	.14	1.00	.86
	Punish pos. contact	0	.28	.28
	Punish neg. contact	.86	1.39	.53
Peer Responds	Negative verbal	.57	.56	-.01
	Negative nonverbal	.43	.28	-.15
	Positive verbal	1.00	1.50	.50
	Positive nonverbal	.57	1.17	.60
	Nothing	1.71	1.61	-.10

Percent of Behavior within Block\*

Pre-	Post-	Post- minus Pre-Difference	
Peer Initiates	8	4	-4
	25	12	-13
	25	48	23
	42	36	-6
Trainee Initiates	17	9	-8
	44	11	-33
	11	38	27
	28	42	14
Trainee Responds	53	28	-25
	0	4	4
	7	25	18
	0	7	7
	40	35	-5
Peer Responds	13	11	-2
	10	5	-5
	23	29	6
	13	23	10
	40	32	-8

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WASHBURN TRAINEE-E-4 (Playground)

 Average Frequencies per  
Six-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	Pre-	Post-	Post- minus Pre-Difference	
	5 Units	12 Units					
Peer Initiates	Negative verbal	0	.5	.5	0	20	20
	Negative nonverbal	1.40	.83	-.57	70	33	-37
	Positive verbal	.40	.92	.52	20	37	17
	Positive nonverbal	.20	.25	.05	10	10	0
Trainee Initiates	Negative verbal	0	.5	.50	0	19	19
	Negative nonverbal	.40	.17	-.23	20	6	-14
	Positive verbal	1.40	1.33	-.07	70	50	-20
	Positive nonverbal	.20	.67	.47	10	25	15
Trainee Responds	Reinforce pos. contact	.40	1.42	1.02	12	40	28
	Reinforce neg. contact	.60	.5	-.10	18	14	-4
	Extinction	.20	.58	.38	6	16	10
	Punish pos. contact	0	.17	.17	0	5	5
	Punish neg. contact	2.20	.92	-1.28	65	26	-39
Peer Responds	Negative verbal	.40	.92	.52	7	14	7
	Negative nonverbal	.80	1.17	.37	15	18	3
	Positive verbal	1.20	1.83	.63	22	29	7
	Positive nonverbal	.20	1.08	.88	4	17	13
	Nothing	2.80	1.33	-1.47	52	21	-31

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WASHBURN TRAINEE E-5 (Playground)

Average Frequencies per  
Six-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	10 Units	20 Units	
Negative verbal	.20	.25	.05
Negative nonverbal	.60	.20	-.40
Positive verbal	.50	.85	.35
Positive nonverbal	.10	.40	.30

	Pre-	Post-	Post- minus Pre-Difference
	14	15	1
	43	12	-31
	36	50	14
	7	24	17

Trainee Initiates	Negative verbal	0	.05	.05
	Negative nonverbal	0	.20	.20
	Positive verbal	1.20	.90	-.30
	Positive nonverbal	.30	.55	.25

Trainee Initiates	0	3	3
	0	12	12
	80	53	-27
	20	32	12

Trainee Responds	Reinforce pos. contact	1.00	1.90	.90
	Reinforce neg. contact	.10	.10	0
	Extinction	.60	.30	-.30
	Punish pos. contact	0	0	0
	Punish neg. contact	0	.25	.25

Trainee Responds	59	75	16
	6	4	-2
	35	12	-23
	0	0	0
	0	10	10

Peer Responds	Negative verbal	.10	.20	.10
	Negative nonverbal	0	.25	.25
	Positive verbal	1.40	1.85	.45
	Positive nonverbal	.30	1.35	1.05
	Nothing	1.00	.55	-.45

Peer Responds	4	5	1
	0	6	6
	50	44	-6
	11	32	21
	36	13	-23

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

Average Frequencies per  
Six-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	8 Units	18 Units		
Peer Initiates	Negative verbal	.13	.33	.20
	Negative nonverbal	.75	.22	-.53
	Positive verbal	.38	.61	.23
	Positive nonverbal	0	.78	.78
Trainee Initiates	Negative Verbal	.38	.11	-.27
	Negative nonverbal	1.00	.17	-.83
	Positive verbal	.75	1.56	.81
	Positive nonverbal	.25	.33	.08
Trainee Responds	Reinforce pos. contact	1.00	1.17	.17
	Reinforce neg. contact	0	.33	.33
	Extinction	.13	.78	.65
	Punish pos. contact	0	.11	.11
Peer Responds	Punish neg. contact	.63	.17	-.46
	Negative verbal	.38	.44	.06
	Negative nonverbal	1.25	.28	-.97
	Positive verbal	1.25	1.56	.31
Peer Responds	Positive nonverbal	.88	.83	-.05
	Nothing	.63	1.22	.59

## Percent of Behavior within Block\*

Pre-	Post-	Post- minus Pre-Difference	
Peer Initiates	10	17	7
	60	11	-49
	30	31	1
	0	40	40
Trainee Initiates	16	5	-11
	42	8	-34
	32	72	40
	11	15	4
Trainee Responds	57	46	-11
	0	13	13
	7	30	23
	0	4	4
	36	7	-29
Peer Responds	9	10	1
	29	6	-23
	29	36	7
	20	19	-1
	14	28	14

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WASHBURN TRAINEE E-7 (Playground)

Average Frequencies per  
Six-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	Pre-	Post-	Post- minus Pre-Difference	
	10 Units	11 Units					
Peer Initiates	Negative verbal	.10	0	-.10	4	0	-4
	Negative nonverbal	.50	.36	-.14	19	17	-2
	Positive verbal	1.20	1.27	.07	44	61	17
	Positive nonverbal	.90	.45	-.45	33	22	-11
Trainee Initiates	Negative verbal	0	.09	.09	0	3	3
	Negative nonverbal	.60	.09	-.51	24	2	-21
	Positive verbal	1.50	1.64	.14	60	53	-7
	Positive nonverbal	.40	1.27	.87	16	41	25
Trainee Responds	Reinforce pos. contact	1.60	2.09	.49	55	79	24
	Reinforce neg. contact	.50	.18	-.32	17	7	-10
	Extinction	.60	.18	-.42	21	7	-14
	Punish pos. contact	.20	.09	-.11	7	3	-4
Peer Responds	Punish neg. contact	0	.09	.09	0	3	3
	Negative verbal	.10	.27	.17	2	5	3
	Negative nonverbal	.30	.36	.06	6	6	0
	Positive verbal	1.70	2.27	.57	33	39	6
	Positive nonverbal	.80	1.36	.56	15	23	8
	Nothing	2.30	1.54	-.76	44	27	-17

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WASHBURN TRAINEE E-8 (Playground)

 Average Frequencies per  
Six-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	12 Units	15 Units		
Peer Initiates	Negative verbal	.25	.20	-.05
	Negative nonverbal	.58	.47	-.11
	Positive verbal	.50	.87	.37
	Positive nonverbal	.83	.53	-.30
Trainee Initiates	Negative verbal	.17	.40	.23
	Negative nonverbal	1.00	.87	-.13
	Positive verbal	1.00	1.27	.27
	Positive nonverbal	.92	.53	-.39
Trainee Responds	Reinforce pos. contact	1.25	1.87	.62
	Reinforce neg. contact	.75	.40	-.35
	Extinction	1.00	.80	-.20
	Punish pos. contact	0	0	0
	Punish neg. contact	.25	.40	.15
Peer Responds	Negative verbal	.17	.27	.10
	Negative nonverbal	.50	.80	.30
	Positive verbal	.83	2.13	1.30
	Positive nonverbal	1.25	1.47	.22
	Nothing	2.75	1.47	-.128

## Percent of Behavior within Block\*

Pre-	Post-	Post- minus Pre-Difference	
Peer Initiates	12	10	-.2
	27	23	-.4
	23	42	19
	38	26	-.12
Trainee Initiates	5	13	8
	32	28	-.4
	32	41	9
	30	17	-.13
Trainee Responds	38	54	16
	23	12	-.11
	31	23	-.8
	0	0	0
	8	12	4
Peer Responds	3	4	1
	9	13	4
	15	35	20
	23	24	1
	50	24	-.26

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

Average Frequencies per  
Four-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	34 Units	21 Units	

	Pre-	Post-	Post- minus Pre-Difference
Negative verbal	.18	.10	-.08
Negative nonverbal	.09	0	-.09
Positive verbal	.29	.14	-.15
Positive nonverbal	0	0	0

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	34 Units	21 Units	
Negative verbal	.41	.10	-.31
Negative nonverbal	.21	.05	-.16
Positive verbal	.44	.38	-.06
Positive nonverbal	.06	0	-.06

	Pre-	Post-	Post- minus Pre-Difference
Negative verbal	.37	.18	-.19
Negative nonverbal	.18	.9	-.9
Positive verbal	.39	.72	.33
Positive nonverbal	5	0	-5

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	34 Units	21 Units	
Reinforce pos. contact	.29	.38	.09
Reinforce neg. contact	.41	0	-.41
Extinction	.15	.10	-.05
Punish pos. contact	.21	.05	-.16
Punish neg. contact	.44	.29	-.15

	Pre-	Post-	Post- minus Pre-Difference
Reinforce pos. contact	20	47	27
Reinforce neg. contact	27	0	-27
Extinction	10	12	2
Punish pos. contact	14	5	-8
Punish neg. contact	29	35	6

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	34 Units	21 Units	
Negative verbal	.88	.33	-.55
Negative nonverbal	.29	.05	-.24
Positive verbal	.59	.52	-.07
Positive nonverbal	.09	.05	-.04
Nothing	.44	.29	-.15

	Pre-	Post-	Post- minus Pre-Difference
Negative verbal	38	27	-.11
Negative nonverbal	13	4	-.9
Positive verbal	26	42	.16
Positive nonverbal	4	4	0
Nothing	19	23	.4

## DATA SUMMARY FOR WOODLAND TRAINEE J-9 (Hallways)

 Average Frequencies per  
Four-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	11 Units	11 Units	
Negative verbal	0	.09	.09
Negative nonverbal	0	.36	.36
Positive verbal	.73	.73	0
Positive nonverbal	.18	0	-.18

	Pre-	Post-	Post- minus Pre-Difference
	0	8	8
	0	31	31
	80	61	-19
	20	0	-20

Trainee Initiates	Negative verbal	.09	.18	.09
	Negative nonverbal	.18	.09	-.09
	Positive verbal	.55	.55	0
	Positive nonverbal	.09	.18	.09

Trainee Initiates	10	18	8
	20	9	-11
	60	54	-6
	10	18	8

Trainee Responds	Reinforce pos. contact	1.09	.27	-.82
	Reinforce neg. contact	0	.45	.45
	Extinction	.18	.55	.37
	Punish pos. contact	0	.36	.36
	Punish neg. contact	0	.55	.55

Trainee Responds	85	12	-73
	0	21	21
	14	25	11
	0	17	17
	0	25	25

Peer Responds	Negative verbal	.09	.36	.27
	Negative nonverbal	0	.55	.55
	Positive verbal	.82	1.09	.27
	Positive nonverbal	.18	0	-.18
	Nothing	.45	.27	-.18

Peer Responds	6	16	10
	0	24	24
	53	48	-5
	12	0	-11
	29	12	-17

DATA SUMMARY FOR WOODLAND TRAINEE J-10 (Classrooms)

Average Frequencies per  
Four-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	.06	0	-.06
Negative nonverbal	0	.08	.08
Positive verbal	.34	.17	-.17
Positive nonverbal	0	0	0

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	0	.04	.04
Negative nonverbal	.03	0	-.03
Positive verbal	.20	.13	-.07
Positive nonverbal	0	.04	.04

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Reinforce pos. contact	.43	.25	-.18
Reinforce neg. contact	.03	0	-.03
Extinction	.17	.04	-.13
Punish pos. contact	.03	0	-.03
Punish neg. contact	.03	.17	.14

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	.09	.08	-.01
Negative nonverbal	0	.08	.08
Positive verbal	.37	.29	-.08
Positive nonverbal	.09	.04	-.05
Nothing	.03	.13	.10

Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	14	0	-.14
Negative nonverbal	0	33	33
Positive verbal	85	66	-.19
Positive nonverbal	0	0	0

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	0	20	20
Negative nonverbal	12	0	-.12
Positive verbal	87	60	-.27
Positive nonverbal	0	20	20

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Reinforce pos. contact	62	54	-.8
Reinforce neg. contact	4	0	-.4
Extinction	25	9	-.16
Punish pos. contact	4	0	-.4
Punish neg. contact	4	36	.32

  

Behaviors Observed	Pre-	Post-	Post- minus Pre-
	35 Units	24 Units	Difference
Negative verbal	15	13	-.2
Negative nonverbal	0	13	.13
Positive verbal	65	47	-.18
Positive nonverbal	15	6	-.9
Nothing	5	20	.15

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WOODLAND TRAINEE J-10 (Hallways)

Average Frequencies per  
Four-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	Pre-	Post-	Post- minus Pre-Difference
	11 Units	9 Units				
Peer Initiates	Negative verbal	0	0	0	0	0
	Negative nonverbal	.09	0	-.09	25	0
	Positive verbal	.27	.22	-.05	75	66
	Positive nonverbal	0	.11	.11	0	33
Trainee Initiates	Negative verbal	0	0	0	0	0
	Negative nonverbal	0	0	0	0	0
	Positive verbal	.27	.22	-.05	42	100
	Positive nonverbal	.36	0	-.36	57	0
Trainee Responds	Reinforce pos. contact	.36	.44	.08	57	100
	Reinforce neg. contact	0	0	0	0	0
	Extinction	.18	0	-.18	28	0
	Punish pos. contact	.09	0	-.09	14	0
	Punish neg. contact	0	0	0	0	0
Inanimate objects	Temporary verbal	0	0	0	0	0
	Temporary nonverbal	11	0	-.11	12	0

## DATA SUMMARY FOR WOODLAND TRAINEE J-11 (Classroom)

 Average Frequencies per  
Four-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	36 Units	24 Units		
Peer Initiates	Negative verbal	.11	.04	-.07
	Negative nonverbal	.06	.04	-.02
	Positive verbal	.31	.13	-.18
	Positive nonverbal	.03	0	-.03
Trainee Initiates	Negative verbal	.33	.46	.13
	Negative nonverbal	.11	.13	.02
	Positive verbal	.11	.21	.10
	Positive nonverbal	.08	0	-.08
Trainee Responds	Reinforce pos. contact	.25	.29	.04
	Reinforce neg. contact	.42	.38	-.04
	Extinction	.03	.13	.10
	Punish pos. contact	.14	.13	-.01
Peer Responds	Punish neg. contact	.17	.08	-.09
	Negative verbal	.44	.63	.19
	Negative nonverbal	.33	.13	-.20
	Positive verbal	.22	.63	.41
Peer Initiates	Positive nonverbal	.14	0	-.14
	Nothing	.31	.21	-.10

Pre-	Post-	Post- minus Pre-Difference	
Trainee Initiates	22	20	-.2
	11	20	.9
	61	60	-.1
	5	0	-.5
Trainee Responds	52	58	.6
	17	16	-.1
	17	26	.9
	13	0	-.13
Peer Responds	25	29	.4
	42	37	-.4
	3	13	.10
	14	13	-.1
Peer Initiates	17	8	-.9
	31	39	.8
	23	8	-.15
	15	39	.24
Peer Initiates	10	0	-.10
	21	13	-.8

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

DATA SUMMARY FOR WOODLAND TRAINEE J-11 (Hallways)

Average Frequencies per  
Four-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre- Difference
	12 Units	9 Units	
Negative verbal	.08	.11	.03
Negative nonverbal	.08	0	-.08
Positive verbal	.58	.33	-.25
Positive nonverbal	.08	.11	.03

Percent of Behavior within Block\*

	Pre-	Post-	Post- minus Pre- Difference
Peer Initiates	10	20	10
Trainee Initiates	10	0	-10
Trainee Responds	70	60	-10
Peer Responds	10	20	10

Peer Initiates	Negative verbal	.33	.22	.11
Trainee Initiates	Negative nonverbal	.42	0	-.42
Trainee Responds	Positive verbal	.58	.78	.20
Peer Responds	Positive nonverbal	.08	0	-.08

Peer Initiates	24	22	-2
Trainee Initiates	29	0	-29
Trainee Responds	41	74	36
Peer Responds	16	0	-16

Trainee Responds	Reinforce pos. contact	.67	.67	0
Trainee Responds	Reinforce neg. contact	.42	.33	-.09
Trainee Responds	Extinction	.17	.22	.05
Peer Responds	Punish pos. contact	0	0	0
Peer Responds	Punish neg. contact	0	0	0

Trainee Responds	53	54	1
Trainee Responds	33	27	-6
Trainee Responds	13	18	5
Peer Responds	0	0	0
Peer Responds	0	0	0

Peer Responds	Negative verbal	.33	.22	-.11
Peer Responds	Negative nonverbal	.50	0	-.5
Peer Responds	Positive verbal	.75	.22	.47
Peer Responds	Positive nonverbal	.08	.11	.03
Peer Responds	Nothing	.25	.56	.31

Peer Responds	17	11	-6
Peer Responds	26	0	-26
Peer Responds	39	58	19
Peer Responds	4	5	1
Peer Responds	13	26	13

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

DATA SUMMARY FOR WOODLAND TRAINEE J-12 (Classrooms)

Average Frequencies per  
Four-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	21 Units	19 Units		
Peer Initiates	Negative verbal	.19	0	-.19
	Negative nonverbal	.14	.05	-.09
	Positive verbal	.33	.16	-.17
	Positive nonverbal	.10	.11	.01
Trainee Initiates	Negative verbal	.52	.26	-.26
	Negative nonverbal	.19	.11	-.08
	Positive verbal	.62	.37	-.25
	Positive nonverbal	0	0	0
Trainee Responds	Reinforce pos. contact	.57	.58	.01
	Reinforce neg. contact	.57	.37	-.20
	Extinction	.24	.05	-.19
	Punish pos. contact	.10	.11	.01
Peer Responds	Punish neg. contact	.10	0	-.10
	Negative verbal	.14	.21	.07
	Negative nonverbal	.38	.11	-.27
	Positive verbal	.81	.95	.14
	Positive nonverbal	.10	0	-.10
	Nothing	.90	.47	-.43

Percent of Behavior within Block\*

	Pre-	Post-	Post- minus Pre-Difference
Peer Initiates	25	0	-.25
	19	16	-.3
	44	50	.6
	12	33	.21
Trainee Initiates	39	35	-.4
	14	14	0
	46	50	.4
	0	0	0
Trainee Responds	36	52	.16
	36	33	-.3
	15	5	-.10
	6	10	.4
Peer Responds	6	12	.6
	16	6	-.10
	35	54	.19
	4	0	-.4
	39	27	-.12

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer-Responds.

## DATA SUMMARY FOR WOODLAND TRAINEE J-12 (Hallways)

Average Frequencies per  
Four-Minute Unit of Observation

## Percent of Behavior within Block\*

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference
	7 Units	7 Units	

	Pre-	Post-	Post- minus Pre-Difference
	43	25	-18
	14	25	11
	43	50	7
	0	0	0

Peer Initiates			
	Negative verbal	.86	0
	Negative nonverbal	0	0
	Positive verbal	.29	.43
	Positive nonverbal	.14	0

Trainee Initiates			
	Negative verbal	.66	0
	Negative nonverbal	0	0
	Positive verbal	.22	.100
	Positive nonverbal	.11	0

Trainee Responds			
	Reinforce pos. contact	.57	.57
	Reinforce neg. contact	.57	0
	Extinction	0	.29
	Punish pos. contact	0	.14
	Punish neg. contact	.14	.29

Peer Responds			
	Reinforce pos. contact	.44	.44
	Reinforce neg. contact	.44	0
	Extinction	0	.22
	Punish pos. contact	0	.11
	Punish neg. contact	.11	.22

Peer Responds			
	Negative verbal	.29	0
	Negative nonverbal	.57	.29
	Positive verbal	.86	.71
	Positive nonverbal	0	0
	Nothing	.71	.57

Peer Responds			
	Negative verbal	.12	0
	Negative nonverbal	.24	.18
	Positive verbal	.35	.45
	Positive nonverbal	0	0
	Nothing	.29	.36

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

## DATA SUMMARY FOR WOODLAND TRAINEE J-13 (Classroom)

Average Frequencies per  
Four-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre-Difference	
	31 Units	20 Units		
Peer Initiates	Negative verbal	.06	.05	-.01
	Negative nonverbal	.06	0	-.06
	Positive verbal	.16	.15	-.01
	Positive nonverbal	0	0	0
Trainee Initiates	Negative verbal	.19	.05	-.14
	Negative nonverbal	.10	0	-.10
	Positive verbal	.42	.35	-.07
	Positive nonverbal	.06	0	-.06
Trainee Responds	Reinforce pos. contact	.35	.60	.25
	Reinforce neg. contact	.03	0	-.03
	Extinction	.13	0	-.13
	Punish pos. contact	.06	0	-.06
Peer Responds	Punish neg. contact	.26	0	-.26
	Negative verbal	.26	0	-.26
	Negative nonverbal	.13	0	-.13
	Positive verbal	.65	.70	.05
Positive nonverbal	.06	.15	.09	
	Nothing	.19	.15	-.04

## Percent of Behavior within Block\*

Pre-	Post-	Post- minus Pre-Difference	
Peer Initiates	22	25	3
	22	0	-22
	55	75	20
	0	0	0
Trainee Initiates	25	12	-13
	12	0	-12
	54	87	33
	8	0	-8
Trainee Responds	42	100	58
	4	0	-4
	15	0	-15
	8	0	-8
Peer Responds	31	0	-31
	20	0	-20
	10	0	-10
	50	70	20
Positive nonverbal	5	15	10
	15	15	0

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.

DATA SUMMARY FOR WOODLAND TRAINEE J-13 (Hallways)

Average Frequencies per  
Four-Minute Unit of Observation

Behaviors Observed	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	0	0	0
Negative nonverbal	.25	0	-.25
Positive verbal	.88	.09	-.79
Positive nonverbal	0	.18	.18

  

Trainee Initiates	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	.13	0	-.13
Negative nonverbal	0	.09	.09
Positive verbal	.38	1.09	.71
Positive nonverbal	0	.09	.09

  

Trainee Responds	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Reinforce pos. contact	1.38	.55	-.83
Reinforce neg. contact	.13	.09	-.04
Extinction	0	.55	.55
Punish pos. contact	0	0	0
Punish neg. contact	.25	0	-.25

  

Peer Responds	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	.13	0	-.13
Negative nonverbal	.13	.18	.05
Positive verbal	1.00	1.27	.27
Positive nonverbal	.13	.09	-.04
Nothing	.13	.64	.51

Percent of Behavior within Block\*

Peer Initiates	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	0	0	0
Negative nonverbal	22	0	-22
Positive verbal	77	33	-44
Positive nonverbal	0	66	66

  

Trainee Initiates	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	25	0	-25
Negative nonverbal	0	7	7
Positive verbal	75	85	10
Positive nonverbal	0	7	7

  

Trainee Responds	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Reinforce pos. contact	78	46	-.32
Reinforce neg. contact	7	7	0
Extinction	0	46	46
Punish pos. contact	0	0	0
Punish neg. contact	14	0	-.14

  

Peer Responds	Pre-	Post-	Post- minus Pre- Difference
	8 Units	11 Units	
Negative verbal	8	0	-.8
Negative nonverbal	8	8	0
Positive verbal	67	58	-.9
Positive nonverbal	8	4	-.4
Nothing	8	29	.21

\*There are four blocks in the above table: Peer Initiates, Trainee Initiates, Trainee Responds, and Peer Responds.